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## AN APPRAISAL TECHNIQUE FOR URBAN PROBLEM AREAS AS A BASIS FOR HOUSING POLICY OF LOCAL GOVERNMENTS<sup>1</sup>

### Illustrative Results from Three Test Surveys

Report of the SUBCOMMITTEE ON APPRAISAL OF RESIDENTIAL AREAS, *Committee on the Hygiene of Housing, American Public Health Association*

#### I. THE METHOD OF APPRAISAL

*The committee's approach.*—Objective appraisal of over-all housing characteristics of substandard areas in terms of their essential healthfulness is becoming increasingly important with the expanding interest of health departments in housing and with the widespread feeling that housing must take a significant place in post-war planning.

The first task undertaken by the Committee on the Hygiene of Housing was the establishment of a series of "Basic Principles of Healthful Housing."<sup>2</sup> Since the publication of that document there have been many requests from public health officials that the committee translate the substance of these principles into a yardstick for the measurement of housing conditions in order that local programs of inspection and enforcement might be better guided. The development of a technique to accomplish this has been the work of this subcommittee.<sup>3</sup> It is recognized that such a technique could be employed by local health departments or other local agencies, depending upon their precise needs, sometimes on a sampling basis, sometimes for a whole substandard area. In working out the technique, the subcommittee has taken care at all times to keep it flexible enough to meet the varying needs which will arise, but still to keep

<sup>1</sup> Presented at Thirteenth Meeting of Committee on the Hygiene of Housing, Washington, D. C., February 2, 1942. Prepared by Allan A. Twichell and Anatole Solow. Members of the subcommittee are: Frederick J. Adams, F. Stuart Chapin, Earle S. Draper, Andrée Emery, George C. Ruhland, Rollo H. Britten, chairman, Allan A. Twichell, secretary, and Anatole Solow, research associate.

The concluding sections of this report, to be published in an early issue of the PUBLIC HEALTH REPORTS, will carry further the analysis of these three test surveys to illustrate the specific actions and types of administrative policy which may naturally develop from the application of this technique.

<sup>2</sup> Basic Principles of Healthful Housing, *Am. J. Pub. Health*, 28: 351-372 (1938). Second edition issued in 1939 and reprinted as appendix to the committee's "Housing for Health" (1941). Reprints available from the committee, 310 Cedar Street, New Haven, Conn., at 25 cents per copy.

<sup>3</sup> The present subcommittee was preceded by the Subcommittee on Housing Survey Procedures, under the chairmanship of Dr. George C. Ruhland, health officer of the District of Columbia.

to the fundamental purpose of an objective appraisal of the quality of housing in substandard areas.

It was believed that a technique developed with these objectives in mind would lead to the abandonment of the common practice of permitting sporadic complaints to guide the housing inspection service of health departments and would promote a method of systematic inspection and enforcement with respect to specific housing problem areas.<sup>4</sup>

Determination of substandard areas may be thought of from two points of view. First, there is the broad outlining, through city-wide surveys, of areas in which unsatisfactory housing conditions may be expected. Such delimitation, it is felt, should be available through real property inventories, the 1940 housing census, or later surveys utilizing the housing census schedule. After careful consideration of such procedures, the subcommittee came to the conclusion that it would be unnecessary to develop a new schedule for a city-wide survey. The second point of view is that of the determination of the relative quality of specific blocks of sections lying within an area generally substandard. Such determination requires a more intensive type of survey, which, however, must still be kept within practicable limits.

A shortcoming of the city-wide housing surveys just mentioned lies in the fact that the collected data do not readily lend themselves to a variety of purposes for local government agencies concerned with housing. In the development of its new technique, therefore, the subcommittee has put particular emphasis on developing a method of data analysis whereby final results could be readily summarized and interpreted by local health departments and various other agencies as a guide for their policy and practice with regard to areas presenting housing problems.

The subcommittee considers that a survey technique designed for this more intensive coverage should provide the following:

Reasonably thorough indication of the housing conditions which may significantly affect physical or mental health, with clear separation of the relatively fixed physical conditions of the structure and the changeable factors of occupancy and maintenance; and with recognition of the neighborhood environment as an integral part of the problem.

Objective description of these conditions in terms of facilities and characteristics which can be reliably observed by different enumerators with a minimum of difference due to subjective judgment.

Schedules and procedures which can be effectively used by the regular personnel of health departments and other local agencies.

<sup>4</sup> An example of the use of such systematic inspection service is the experience of Memphis, Tenn. See Graves, L. M., and Fletcher, Alfred H.: *Enforcement and Subsidy in the Control of Slums*, in "Housing for Health," Committee on the Hygiene of Housing (1941), pp. 18-36.

A reasonable scoring method for presentation of summary findings and for overall comparison of conditions from structure to structure, district to district, or perhaps from city to city.

*Selection of appraisal items.*—Although the subcommittee's criteria for the selection of items to be appraised follow as closely as possible the "Basic Principles of Healthful Housing,"<sup>5</sup> it would be difficult in a survey of this character to ascertain the exact extent of conformity to all these principles. The information for many of the items could not be obtained without professional personnel, elaborate equipment, and extended observation. Furthermore, so many items would have to be covered that the survey would lose its practical value.

The solution has seemed to be in a screening method by means of index facts, i. e., in the determination of a limited number of factors which may be taken to represent the whole complex of housing conditions. The point is of first importance since one of the most difficult aspects of a survey procedure is to determine the amount of detailed information both necessary and practicable. For instance, the presence of an inside flush toilet not shared by other households is determined and scored not only because of an interest in whether such a facility is present, but because of its assumed intrinsic meaning as one element in an index of hygienic housing. Similarly it appears from studies of the development of residential areas that undesirable housing conditions tend to coincide with heterogeneous, unplanned land uses. Thus the intermixture of industrial and commercial uses with residences is ascertained both because industrial nuisances may affect the inhabitants and because land-use distribution is known to reflect the general character of the area.

The selection of index facts to be included offers numerous difficulties, not the least of which is the objectivity of the items, in other words, the extent to which identical information can be obtained by different enumerators. With this criterion in mind, items are included only where quantitative values can be set up or discrete lines drawn by exact definition.

In treating items which appear in the schedules of the real property inventories and Federal housing census, the subcommittee recognized the importance of maintaining comparability. In view of the purpose of this technique, however, it was necessary to develop new items and special emphases.

In each dwelling unit both family composition and room dimensions are obtained. This permits the computation of overcrowding on three bases: gross area per person, net living (nonsleeping) area per person, and the number of persons per room—the measure commonly

<sup>5</sup> See footnote 2.

used in housing surveys. The use of health department inspectors for the enumeration is particularly effective in connection with items of this type, for such inspectors are able to gain entry into all parts of the dwelling.

Special objective measures have been developed by the subcommittee for two important factors which have been unsatisfactorily dealt with, or omitted, in most other housing surveys: structural deterioration, and the crowding together of buildings, which seriously impairs the quality of daylight in so many congested areas. Emphasis has been put on the character of public halls and on services provided in multiple dwellings by the landlord. Sanitary and heating facilities are considered in some detail, as are housekeeping facilities, including kitchen equipment and closets.

A clear distinction is made between those items which are of a descriptive nature and are used for classification purposes, such as type of building, income, rent, or size of family, and those condition items which determine the quality of housing and which are used for rating.

The environmental part of the technique, in addition to its use in appraising individual dwellings and structures, is being developed for the use of police-power agencies, as a guide for site selection by housing authorities, for the appraisal of rehabilitation schemes, and for other planning purposes. This approach considers the intermixture of residential and nonresidential uses, specific industrial nuisances, the density of land coverage, the usability of open spaces, the availability of public utilities and other community facilities such as schools and playgrounds, and finally specific hazards: exposure to heavy traffic, liability to flooding, noxious odors, and the like.

It is of course recognized that some neighborhood characteristics will vary as to their influences on dwellings within an area and can be only roughly appraised, and that for some factors new measures must be developed.

*Data collection.*—The technique involves three field schedules: one for the dwelling unit, one for the structure as a whole, and a third for the block and neighborhood. The dwelling unit and structure schedules have been developed to a final form and have been tested in three New England cities.<sup>6</sup> The block or environmental schedule, which is being developed in cooperation with the City Planning Department of Massachusetts Institute of Technology, is in the experimental stage. The dwelling and structure schedules have been designed for enumeration by inspectors of local health departments or nonprofessional persons after brief intensive training, and the tests in New England have demonstrated the feasibility of this

<sup>6</sup> The field schedules for the dwelling unit and the structure will be reproduced in a later section of this report.



procedure. However, the environmental appraisal requires the active participation of a sanitary or planning engineer.

*The scoring method.*—The system of scoring has been developed as a series of penalty ratings which seek to measure the departure of any condition from a standard of acceptability derived by the subcommittee from the Basic Principles. While weights have been only tentatively assigned to individual deficiency items, the results of several test surveys illustrated in the next section have convinced the subcommittee that the summation of such individual penalties can be made to give a reliable picture of the over-all quality of housing.

Basic deficiencies, any one of which may make a dwelling substandard—such as the absence of private toilet—are separately recorded as a supplement to the over-all penalty score. Scoring is done in the office rather than in the field, for it is believed that the enumerator should report conditions only and should not complicate either his work or his attitudes by the assignment of ratings. Separate sub-scores are computed for the physical condition of the dwelling and for its occupancy characteristics. The rating form has been developed quite separately from the schedule, in order to facilitate changes in weighting in the light of cumulative experience or in the light of conditions which may vary from region to region.

## II. ILLUSTRATIVE RESULTS FROM THREE TEST SURVEYS

*Purpose and nature of the studies.*—In the development of its procedure the subcommittee has made three test surveys, in order to check on the applicability of the technique to various types of urban problem areas, to test the feasibility of its execution with nontechnical personnel, to develop a method of scoring, and to test in a preliminary way the probable utility of the results in shaping the policy of local government bureaus concerned with housing.

Problem areas of three types have been surveyed, one each in New Haven, Waterbury, and Stamford, Conn. In one of these cities 12 blocks of a well-known slum district were surveyed with the earliest version of the schedules, and for one representative block (131 dwelling units) the data were subsequently brought into form comparable with material obtained from later schedules used in the other 2 tests.<sup>7</sup> In another city the entire central district of mixed residence and business, comprising 18 blocks and 849 dwelling units, was analyzed. In the third case the study covered a random sample of 100 dwelling units, selected from all the low-rent districts of the city. The purpose here is not to characterize the housing in any of these cities, but

<sup>7</sup> Since these studies were carried out at different stages in the development of the subcommittee's work, certain minor variations have occurred in the schedules used from one to another of these cities. While the variations would prevent comparison of the results for some minor details of the procedure, they do not affect the comparability of results for major characteristics which will be considered here.

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to illustrate the range of problems which may arise in areas of different types in any city or group of cities. In fact for the purpose of this report these test surveys might be viewed as though they had set out to appraise problem areas of the same city, on a graded scale running from the center of its worst slum through a larger district generally considered substandard, and then to the entire low-rent, though not necessarily substandard or even blighted, districts of the city.

All the studies were carried out in cooperation with the local health departments, and the field work was done almost altogether by regular sanitary inspectors. In one case the survey was undertaken at the request of the local housing authority, which used part of the findings in planning its slum clearance program. One survey was cosponsored by the new housing division of the Connecticut State Department of Health.

*Character of areas surveyed.*—The survey areas may be further characterized as follows:

*Survey area I: Slum block (131 dwelling units).*

This consisted of one block in the heart of a district generally recognized to be one of the worst slums in the city. One frontage of the block abuts on a heavy commercial traffic artery connecting the downtown business district with the industrial section, and was characterized by intermixture of tenements with shops, stores, liquor establishments, and other commercial uses; 25 percent of all residential structures were also used for nonresidential purposes.

Sixty percent of the buildings were three-or-more-family structures, 25 percent two-family, and only 15 percent one-family structures. The median dwelling unit rental was \$14 monthly, and the median rent per room was \$3.30. The reported median income of the families living in this block was between \$750 and \$1,000 per year.

A previously conducted ecological survey of the city characterized the population of the district including survey area I as being predominantly foreign born, and consisting of laborers and artisans with very high delinquency and dependency rates.

*Survey area II: Central substandard area (849 dwelling units).*

This comprises the central district of a city of between 50,000 and 75,000 inhabitants. The neighborhood surveyed lies between a heavily traveled main-line railroad and the principal downtown business street. This area was considered by local officials to be generally blighted and substandard—a condition not infrequently found in similarly located areas of other cities.

Although no detailed environmental survey of this district has yet been conducted, it may be said that the area as a whole shows generally undesirable characteristics for residential use, such as heavy truck traffic, lack of playgrounds or other open space, and several minor obnoxious industries. Approximately half of the area is nonresidential, and only in a few places are there homogeneous residential clusters of any size. Thirty percent of the buildings surveyed contained business on the first floor in addition to dwellings. Of all buildings containing residences, 49 percent are three-or-more-family, 36 percent are two-family, and 15 percent one-family structures.

The median dwelling unit rental was \$20 a month at the time of survey, and the median monthly rent per room \$5.75. Satisfactory income data were not

obtainable throughout the area. Negroes comprise more than one-third the population.

*Survey area III: Entire low-rent district—Random sample (100 dwelling units).*

No pattern can be traced here as to neighborhood environment or social structure, because of the diffusion of the 100 sample dwelling units among various low-rent sections of the city, including both purely residential and highly commercial districts.

Seventy percent of the structures containing these units were of the three-or-more-family type, and 33 percent of structures were used for mixed business and residential purposes. Rent and income figures were not obtained on the schedules used for this test.

*Character of housing as shown by individual deficiencies.*—Figure 1 shows at a glance the gradation of conditions, from one of these areas to the next, which would be expected.

The slum block has a very high incidence of several basic physical deficiencies. The reported need of major structural repairs in over

#### SALIENT HOUSING CHARACTERISTICS OF THREE PROBLEM AREAS

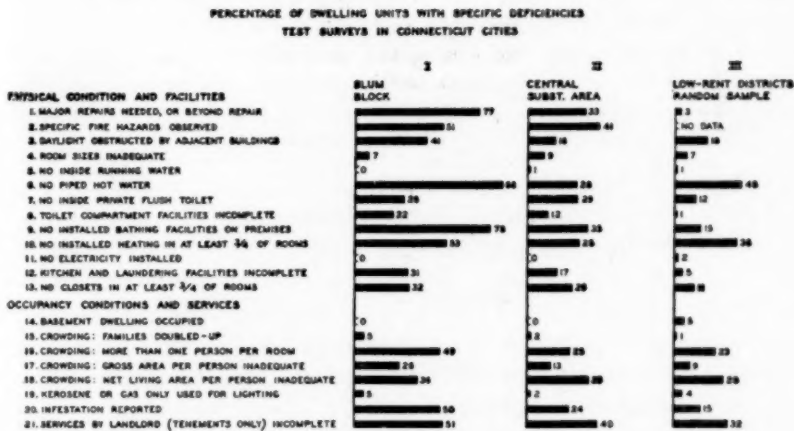


FIGURE 1.

three-quarters of the dwelling units, dependence on primitive heating facilities in over half of them, a high incidence of fire hazards as determined by the local fire department, and considerable daylight obstruction suggest a combination of physical conditions which could hardly be dealt with under any economically feasible scheme of rehabilitation. Toilets are shared with other units or are located outside the dwelling unit in 28 percent of the cases. This fact, combined with the lack of installed bathing facilities on the premises for 78 percent of the dwelling units, clearly suggests a condition which could not be brought into compliance with accepted standards short of renovation so thoroughgoing as to be out of scale with the generally indicated quality of these buildings.

With respect to occupancy conditions in area I, from one-fourth to one-half of the dwelling units show more or less serious conditions with respect to each of three crowding indices: number of persons per room, gross area per person, and net living area per person. A high incidence of reported infestation, especially by rats, is to be expected in structures so generally deteriorated as these, and a figure of 50 percent for this item is not surprising. These two factors of disrepair and infestation alone might almost serve to indicate the hopelessness of salvaging these dwellings. The low-grade character of housing in this area is reflected by the 51 percent of dwelling units located in tenement structures for which the services by landlords are incomplete (two or more of the following services not regularly supplied: lighting of public halls, janitor service for public halls, and removal of garbage and refuse from the dwelling unit).

With no further analysis than is given in figure 1, we have a sketch portrait of the slum block, suggesting conditions beyond any real cure except complete clearance. It is obvious that no such drastic action will be taken by any official agency without further knowledge of the area, including the distribution of deficiencies among various types of families and dwellings. But perhaps it will be of interest to record that in the case of this particular block, the local housing authority upon further study did find demolition justified and promptly carried it out.

Whether conditions that warrant demolition or compulsory vacating will be found in districts with milder deficiencies is perhaps the next question. The data for the central district covered by survey II should give the measure of such a lesser problem area. These findings are undoubtedly more or less typical of the results which will be obtained in blighted areas or partial slums, the treatment of which may involve action considerably short of complete slum clearance. A considerable degree of substandardness and generally primitive character of the buildings are indicated by the percentage of dwellings which show reported need of major repairs, presence of specific fire hazards, and lack of private toilet or bathing facilities; and also by general shortage of built-in closets or adequate kitchen equipment. While two of the indices of crowding show a marked difference in favor of area II in comparison with area I, there is no difference in the case of the third index (net living area per person), and there is some indication that use-crowding of the nonsleeping rooms might be further studied in the substandard area. Serious infestation persists even in this somewhat better district, and a low grade of landlord services is found in only one-fifth less of the dwellings than in survey I.

Further breakdowns of the data from survey II have shown that while no deficiency here has a gross incidence (for these dwellings

considered as a whole) above 41 percent, several defects appear so serious, when cross-tabulated for family sizes, rental ranges, types of structure, etc., as to call for vigorous official action on specific problems.<sup>8</sup>

As for the low-rent dwelling sample covered by survey III, major deficiencies are so much less general than in areas I and II as to suggest at first glance that there is little here to concern the health department, the housing authority, or the welfare commission. However, some problem of obsolescence if not of substandardness is suggested by the high figures for lack of piped hot water and lack of installed heating facilities. A relatively low grade of multiple dwelling structures in this area too is indicated by 32 percent of the units in tenements with incomplete landlord services. Daylight-crowding, one of the basic faults of most New England tenement districts (and of those in many other portions of the country as well), persists in this best of the three survey areas, with 18 percent of the dwelling units located in structures which suffer moderate to serious daylight obstruction by their neighbors.

Inasmuch as the irremediable types of deficiency occur rather infrequently in the low-rent area, it would appear that this area includes a large proportion of dwellings capable of physical rehabilitation.

Perhaps the most striking difference between survey III and the others is in the figures for need of major repair (3 percent as compared with 77 percent and 33 percent). On the basis of a later recheck we know that the low figure cannot be taken as an indication that the structural conditions in area III are so much better. It is rather a demonstration of inadequacy in the common survey methods for determining condition of repair. Our early method of designating structural condition (used to collect the data plotted here for all three surveys) was taken over bodily from the housing survey technique of the Real Property Inventory. Under this method the enumerator subjectively assigns each structure to one of four categories: "good condition," "minor repairs needed," "major repairs needed," and "unfit for use." Our experience with this method, like that of many others, has been most unsatisfactory.<sup>9</sup>

The occupancy data from area III, the low-rent sample, deserve some comment. Here we encounter for the first time the occupancy of basement dwelling units, which can generally be expected to involve serious impediments to decent living. A figure of 5 percent for this item may look innocuous, but basement dwellings, if found in this

<sup>8</sup> The implications of this technique for policy and immediate action of local government bureaus will be explored in some detail in a later section of this report.

<sup>9</sup> A new method for objective measurement of structural deterioration has since been developed by the subcommittee and will be treated in a later section of this report.



proportion throughout the low-rent area, would total some 300 cases. This by itself is a problem which might occupy the energies of the health and building department staffs for some time if the necessary inspection of basement living conditions were made and followed up with appropriate action under the legal powers now vested in these departments. The figures for items 16 and 18 of figure 1 suggest that additional occupancy problems warranting examination exist for at least one-fourth of the families in the low-rent area.

*Summary appraisal by over-all penalty scores.*—While the foregoing type of analysis of housing defects, in terms of individual deficiencies, is believed useful to give a first picture of the character and intensity of the housing problem in a particular area, it fails to provide the summary measures of the problem needed for discriminating policy. The data underlying figure 1, even when elaborately cross-tabulated, still fail to disclose readily those dwellings, structures, or groups of structures which contain the worst combinations of conditions. It is for this purpose that the subcommittee has developed its scheme of deficiency ratings or penalty scores. As previously noted, the scoring system assigns graded penalties to each dwelling unit (with its containing structure) based on the presence or degree of physical deficiencies or occupancy conditions represented in figure 1.

The illustrative results of the scoring system are shown in figure 2, which gives for the three survey areas the distribution of dwelling units by their total deficiency scores for (a) physical condition, (b) occupancy conditions, and (c) these two combined.

Recalling that the slum block was officially found to be in need of clearance, the scoring system may be interpreted first in terms of its results for that area. In survey I, the median penalty score for physical condition of the dwelling unit with its containing structure was 71 points. In another district of the same city, however, the median physical penalty score in a block which was surveyed under this technique but not included in the three test surveys previously discussed was 53 points. Since this block was subsequently demolished by the housing authority under its own slum-clearance program, it may be suggested, for purposes of interpreting figure 2, that groups of dwellings which are characterized by median physical penalties of 50 points or more (on the present provisional scale) are either in, or suspiciously close to, that class of housing which cannot be rehabilitated.

This is too simple a statement of the case, but it will help in visualizing the significance of the illustrative scoring data. That this concept is not too unrealistic is evident from the fact that under the provisional rating scheme a dwelling seldom incurs a physical penalty score as great as 50 points unless it combines several of the basic deficiencies, such as extreme structural deterioration, virtually complete lack of

sanitary and housekeeping facilities, fire hazard, or extreme daylight crowding. On the other hand, because of the construction of the scale, total physical condition penalties of less than 10 points must represent insignificant or mild deficiencies, at least from the viewpoint of official action under the police power.

In figure 2 the distribution of dwellings by total penalty scores (physical and occupancy conditions combined) in the right-hand columns will clarify our picture of how the problem is graded from the slum block to the low-rent district. These three areas have median total scores of 86, 56, and 34 points, respectively, and show marked differences in distribution of dwellings by penalty values. Area II,

APPLICATION OF A PROVISIONAL RATING METHOD

COMPARATIVE MEASURES OF HOUSING CONDITIONS  
IN THREE PROBLEM AREAS

PERCENTAGE DISTRIBUTION OF DWELLING UNITS BY  
PENALTY SCORES: TEST SURVEYS IN CONNECTICUT CITIES

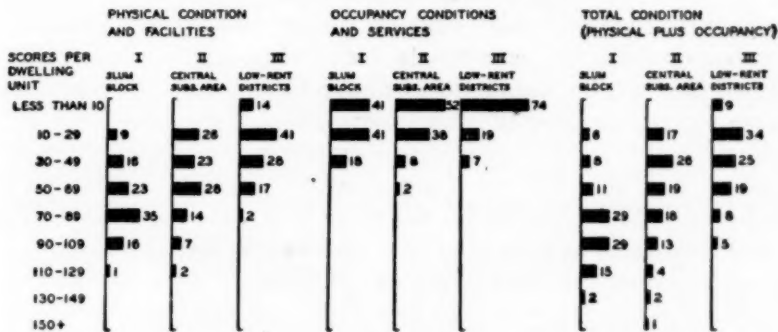


FIGURE 2.

though much better generally than area I, contains some dwellings with total penalties as high as any found in the latter area.<sup>10</sup>

A much better understanding is gained, however, by considering the physical and occupancy components of these total scores. In area I the median physical penalty score is 71 points, and 75 percent of the dwelling units show penalties of 50 points or more—suggested above as a possible rough dividing line beyond which slum clearance may often be necessary. In the central substandard area half the dwellings show physical penalty scores above this level, while the random sample of the entire low-rent area contains about one-fifth of dwellings in this category—an indication that even here there is a sizable job of follow-up for the health department and housing authority.

The scale of penalties for occupancy conditions is short, since few significant objective indices have been found which are eligible for

<sup>10</sup> Unavoidable exigencies made it necessary to process some of the scoring data for the substandard area on a one-sixth random sample basis.

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rating. Occupancy penalties for a dwelling unit therefore seldom run above 50 points. As a rough guide to interpretation of the graphs, it may be said that an occupancy penalty score above 10 points with the present scale is reasonable evidence of undesirable occupancy conditions, though not necessarily of definite overcrowding. Scores above 20 points, however, will generally be incurred only where families are seriously crowded in one or more of the four ways indicated in figure 1.

For the slum block, a presumption of substandard conditions on the occupancy side is shown by scores of more than 10 points for 59 percent of the dwelling units, while the substandard area shows 48 percent. Occupancy scores above 20 points are found in 30 percent of area I and 18 percent of area II. It may be expected that in any follow-up a significant proportion of the families living under these conditions will be found in need of overcrowding abatement.

In illustrating the results obtained from the three test surveys, two points of view have been brought out: (a) the importance of dealing with the character of individual deficiencies of dwelling units in the areas, and (b) the importance of an over-all penalty score to represent conditions of dwellings as a whole. The tests indicate the definite practicability of this technique in determining, with a minimum of tabulation, the character of substandard housing areas.

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### **PATHOLOGIC HISTOLOGY IN GUINEA PIGS FOLLOWING INTRAPERITONEAL INOCULATION WITH THE VIRUS OF "Q" FEVER<sup>1</sup>**

By R. D. LILLIE, *Senior Surgeon, United States Public Health Service*

The purpose of this paper is to describe the pathologic changes encountered in guinea pigs after intraperitoneal inoculation with the virus of "Q" fever. Three strains were utilized, the original "Q" strain obtained from Burnet (1), Dyer's X strain (2), and the M strain isolated from the fatal human case described in previous reports (3, 4). Animals were killed as follows: 4 X, 4 M, and 2 Q strain animals on the first, third, fifth, seventh, ninth, and eleventh days from onset of fever, 2 X and 2 M strain animals on the thirteenth day, and 4 X strain animals on the fifteenth, twentieth, and twenty-fifth days, making a total of 76 guinea pigs. In the X and M strain animals, the brain, part of the spinal column, and the entire thoracic and abdominal viscera en bloc were removed and fixed in Orth's fluid. With the "Q" strain, only heart, lung, liver, spleen, kidney, adrenal, and testicle were routinely taken.

The heart nearly always showed at least a few focal lesions. These became more numerous and more marked after the fifth day.

<sup>1</sup> From the Division of Pathology, National Institute of Health.

The most frequent lesion was lymphocyte infiltration interstitially, beneath the endocardium and diffusely and around vessels in the epicardium. Sometimes this was accompanied by or mixed with a focal proliferation of fibroblasts, particularly beneath the endocardium and around and in the papillary muscles. Vascular endothelial proliferation was relatively infrequent and usually occurred early in the disease. Rarely clusters of coccoid and bacilliform rickettsiae were found in endothelial cells, chiefly on the first day of fever. The epicardial reaction was most marked in the atrioventricular sulcus. Here, in addition to lymphocyte infiltration, there were sometimes serous exudate, fibrin, or plasma cells.

Three small granulomata of fusiform epithelioid cells with a little central nuclear debris and peripheral lymphocyte infiltration were found in 2 guinea pigs killed on the ninth day and one on the eleventh day from onset of fever. All 3 were infected with the X strain.

Focal lesions were perhaps less pronounced with the Q strain than with the M or X strains. With the X strain, they persisted to 25 days after onset, showing some apparent diminution in extent from the sixteenth day on.

*Lungs.*—Purulent pneumonias with organization, abscesses, gangrene and bronchiectases, such as are commonly encountered in guinea pigs, appeared in 4 of the 76 animals. Twenty-one of the remainder showed only congestion or focal perivascular lymphocyte infiltration or no lesions whatever. As the congestion may be assignable to ether anesthesia and as focal perivascular lymphocyte infiltration is a quite frequent finding in guinea pigs, these animals are to be regarded as substantially without pulmonary reaction to the virus of "Q" fever. In 4 more, alveolar hemorrhages were the only other findings. As these are common in sudden death in rodents, they also must be disregarded.

In the remaining 47 animals, 13 inoculated with the M strain, 24 with the X strain, and 10 with the Q strain, there was a vaguely nodular, often peribronchial exudative process characterized by slight septal thickening and alveolar narrowing, and a loose alveolar exudate composed in some alveoli of polymorphonuclear leucocytes alone, in others often adjacent alveoli of red corpuscles, monocytes or coherent clumps of fusiform epithelioid cells, in others of various mixtures of the foregoing. Swollen attached alveolar epithelial cells were sometimes identified. Some animals showed scanty interstitial infiltration by lymphocytes or perhaps an occasional monocyte or swollen fibroblast. Rather infrequently the alveolar exudate contained a few large round cells with vesicular nuclei and large nucleoli which were considered as desquamated epithelial cells.

Such reactions were infrequent and slight in animals killed on the first day of fever. They appeared in about half of the animals taken

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from the third to the ninth day and in 10 of the 12 killed on the eleventh and thirteenth days. In animals killed after the thirteenth day, intra-alveolar exudate was scantier and inconstant, and interstitial infiltration relatively more prominent, sometimes to the point of fairly marked septal thickening and partial atelectasis.

With the Q strain, the variegated alveolar exudate appeared earlier and became quite scanty and purely epithelioid by the seventh day. Interstitial infiltration was also somewhat less marked.

*Trachea and mediastinum.*—Sections of trachea at or near the bifurcation were studied in 66 animals. Focal mucosal lymphocyte infiltration was encountered in 41. It increased in frequency in later animals, occurring in 9 of 25 taken on the first, third, and fifth days, in 11 of 19 killed on the seventh and ninth days, and in 21 of 22 on the eleventh day and later.

Most of the animals killed on the ninth and eleventh days showed a more or less marked focal interstitial and submesothelial infiltration of the mediastinal fatty and areolar tissues by lymphocytes, less often with plasma cells and fibroblasts and mesothelial thickening. This reaction was absent in later stages. One guinea pig showed encapsulating purulent foci and 4 presented definite epithelioid granulomata which in 2 animals contained large multinucleate giant cells. Such lesions were absent in the animals killed on the first, third, fifth, and thirteenth days and occurred in 2 taken on the seventh day, 4 on the ninth, and 7 on the eleventh day from onset of fever.

*Gastro-intestinal tract.*—Sections were taken from the esophagus in the mid-thorax in 36 guinea pigs and at the cardiac end in 41. Stomach sections were made in all M and X strain animals, usually including pylorus, cardia, and lesser curvature. Three levels of small intestine were regularly studied, and sections were taken from caecum, colon, and rectum.

Agminated and solitary lymphoid follicles were noted in 41 sections from 32 guinea pigs. Accumulation and phagocytosis of nuclear fragments within the germinal centers of these follicles were noted in 16 sections from 12 animals.

*Reactions in lymphoid follicles of the intestines*

Day from onset of fever.....	1st	3rd	5th	7th	9th	11th	13th	15th	20th	25th	Total
Lymphoid follicles present:											
Number of guinea pigs.....	4	5	6	3	5	3	1	0	3	2	32
Number of sections.....	5	8	8	4	6	3	1	0	4	2	41
Phagocytosis of nuclear debris:											
Number of guinea pigs.....	1	2	2	3	0	0	1	0	3	0	12
Number of sections.....	2	3	2	4	0	0	1	0	4	0	16



These follicles were located chiefly in the ileum, fewer in other parts of the small and large intestines.

Otherwise, the mucosa of the intestine and stomach was usually normal. Pyogenic ulcers were seen in 3 guinea pigs, one in the fundus of the stomach, two in the rectum. Scattered pus-filled crypts with adjacent polymorphonuclear infiltration were noted in 8 guinea pigs, six in the caecum, two in the colon.

Focal interstitial and perivascular lymphocyte infiltration was noted in the mucosa of the cardia and in the corium and muscularis of the esophagus in 4 of 8 animals on the seventh day and in 7 of 8 on the ninth day from onset of fever, less often before and after that time. Similarly submucosal lymphocyte infiltration of the colon and rectum was noted in 19 of 24 animals killed on the seventh, ninth, and eleventh days and in only 3 of 24 taken on the first, third, and fifth days, and in 5 of 16 taken on or after the thirteenth day.

In the omentum and mesentery and in the serosal layers of the abdominal viscera, there were foci of more or less dense interstitial and perivascular infiltration by lymphocytes and sometimes plasma cells or monocytes as well. Less often patches of fibroblastic and mesothelial proliferation were noted, and in 5 guinea pigs single to few small compact or vacuolated granulomata of polygonal or stellate epithelioid cells were noted. In 2 guinea pigs, multinucleate giant cells were present in these nodules.

Few peritoneal focal lesions were seen in 4 of the 16 guinea pigs taken on the first and third days of fever, moderately numerous lesions were found in 5 of the 8 guinea pigs killed on the fifth day, relatively numerous and larger lesions in 25 of the 28 animals taken on the seventh to the thirteenth days, and some in 7 of the 12 killed on the sixteenth to twenty-fifth days from onset of fever. One granulomata appeared on the seventh, 2 on the eleventh, 1 on the thirteenth, and 1 on the twenty-fifth day.

Gastro-intestinal and peritoneal lesions showed no significant differences in frequency or severity between the two virus strains studied.

*Liver.*—The relation of periportal lymphocyte infiltration, the most frequent finding, to the "Q" fever virus reaction is uncertain, inasmuch as some such infiltration is present in many normal animals. However, there appeared to be a definite increase in frequency and density of this infiltration after the fifth day of the febrile reaction as compared with the first, third, and fifth days. No other significant alterations were seen on the first day of fever. Focal lesions appeared on the third day and were almost constantly present on and after the fifth

day from onset of fever, though they became fewer in number on the eleventh and thirteenth days but persisted as late as the twenty-fifth day.

These focal lesions are small foci of interstitial lymphocyte infiltration and small epithelioid granulomata. Lymphocytic foci not infrequently contain a few swollen endothelial cells or perhaps epithelioid cells. The small epithelioid granulomata are generally less than  $200\mu$  in diameter. They are composed of compactly disposed fusiform to polygonal epithelioid cells or less often of loosely packed stellate cells. They may include centrally a few compressed atrophic or, more often, coagulated necrotic liver cells, or a few, often fragmenting, polymorphonuclear leucocytes. Peripheral or interstitial lymphocyte infiltration is sometimes present, particularly in later stages. In a few guinea pigs killed on or after the eleventh day, centrally placed multinucleate giant cells with peripherally disposed nuclei were present in some of the granulomata. Sometimes such giant cells appeared apparently alone without accompanying epithelioid cells.

The familiar small recent and organizing infarcts of liver tissue so often seen in guinea pigs were present in 20 animals of this series. Their significance is questionable.

The *pancreas* was studied in 65 guinea pigs. Few foci of periductal and interlobular perivascular lymphocyte infiltration were noted, less often intralobular foci. Such focal lesions were found in 12 of the 16 animals killed on the ninth and eleventh days, and rarely in earlier or later animals. No difference was evident between the X and M strains. One paraductal granuloma containing a multinucleate giant cell and accompanied by lymphocyte infiltration was seen in an X strain animal on the twentieth day.

*Spleen.*—The splenic follicles were generally of moderate size and showed a moderate grade of mitotic activity. Large pale follicular reticulo-endothelial cells were often evident, but showed phagocytosis of nuclear fragments in relatively few animals. In 8 guinea pigs killed on the seventh to eleventh days, these pale reticulum cells showed proliferation in solid masses, forming definite granulomata of polygonal epithelioid cells in 5 of them.

The blood content of the splenic pulp was generally moderate or slightly increased, and there was generally a moderate focal lymphocyte infiltration. This cellular infiltration was more marked in some animals in the later stages, and in 5 (eleventh, thirteenth, sixteenth, twenty-fifth, and twenty-fifth days) there was an active splenic myelosis with large lymphoid and myeloid cells and megakaryocytes. Increased numbers of polymorphonuclear leucocytes were present in the pulp in about half of the animals killed on the first and third days of fever, and small clumps of leucocytes were often formed.

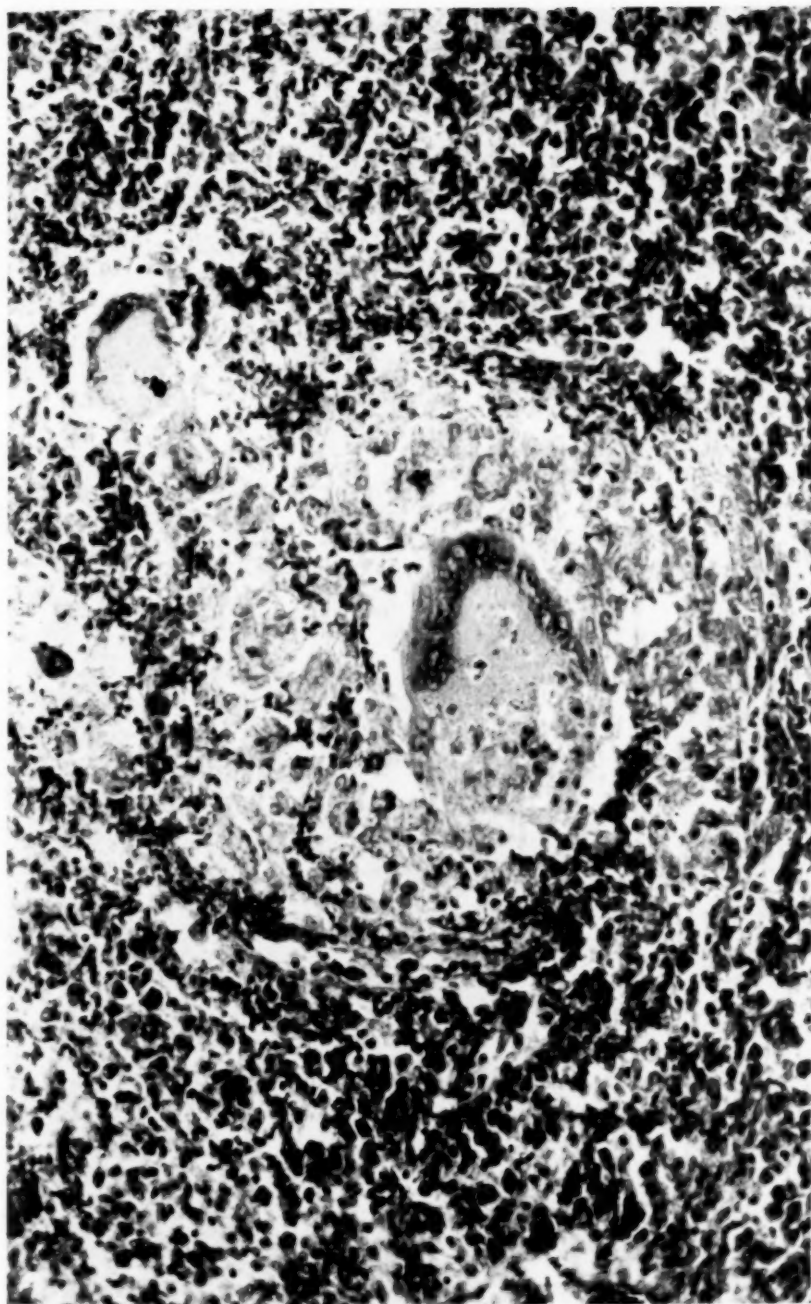
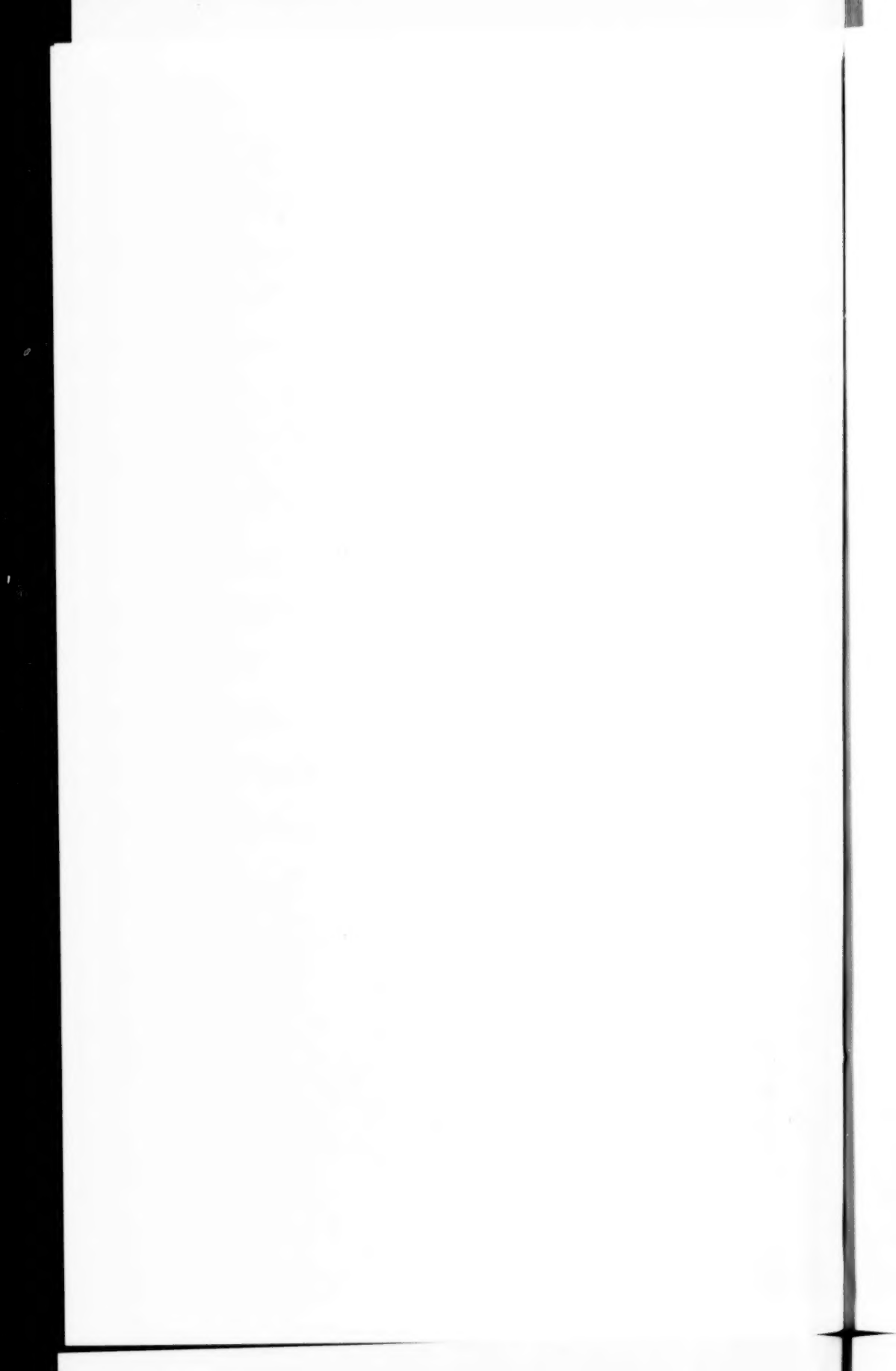


FIGURE 1.—Granuloma in spleen, ninth day ( $\times 300$ ).



A more or less marked sinus reticulo-endothelial hyperplasia was evident in most of the guinea pigs. In 8 animals, 1 killed on the first day, 4 on the third, and 2 each on the fifth and seventh days, this reticulo-endotheliosis graded focally into vague nodules of polygonal epithelioid cells. Definite, well-defined granulomata appeared somewhat later and were present in 28 of the 40 animals killed on the fifth, seventh, ninth, and eleventh days. Occasional granulomata with giant cells were present in 5 of the 16 guinea pigs killed on the thirteenth, sixteenth, twentieth, and twenty-fifth days.

These granulomata were usually quite small, perhaps 100 to 200 $\mu$  in diameter. When numerous, they were sometimes conglomerate in structure, forming nodules as large as 500 $\mu$  in diameter. They were usually compact in structure and composed of polygonal or plump fusiform epithelioid cells. On the third and fifth days they often contained centrally a few polymorphonuclear leucocytes or some nuclear fragments, the latter being seen also through the seventh day. At about this time multinucleate giant cells with numerous small oval leptochromatic nuclei arranged in a peripheral ring or crescent were first seen in the centers of granulomata in some animals. On the ninth and eleventh days, these became more numerous and sometimes replaced most of the epithelioid cells in the granulomata. Usually one giant cell occupied the center of a nodule, but often two or even three giant cells were found in a single nodule. In some of the later animals masses of brown granular pigment were present in the centers of the giant cells.

Focal granulomatous lesions were distinctly more frequent in animals inoculated with the X strain (21 of 26 animals) than in those infected with the M or Q strains of "Q" fever virus (14 of 26, and 6 of 12, respectively).

*Bone marrow.*—Sections of vertebral marrow were studied in 51 guinea pigs. In general, myelocytes and metamyelocytes were the most numerous cell forms, with a gradual and relatively slight increase in polymorphonuclears later in the course of the disease.

Granulomata first appeared on the third day of fever in animals inoculated with the X strain and on the fifth day with the M virus strain. They ranged in number from 1 to 18 in a single cross section of a vertebra. Usually they were much vacuolated and composed of stellate epithelioid cells with a few polymorphonuclear leucocytes centrally, or occasionally some nuclear fragments. Compact nodules of polygonal cells were relatively infrequent, and nearly always accompanied by vacuolated nodules. Leucocytes became less frequent later in the course of the disease, and a few multinucleate giant cells were found only in 2 guinea pigs.

Granulomata were found in 3 of 16 animals taken on the first and third days, in 12 of 15 on the fifth and seventh days, in 12 of 16 on



the ninth and eleventh days, and in 1 of 16 animals taken on the thirteenth to twenty-fifth days.

*Lymph nodes.*—Common mesenteric nodes were studied in 59 guinea pigs, ileocecal in 26, pancreatic in 28, other abdominal in 8, and mediastinal in 43.

In the mesenteric and ileocecal nodes accumulation of nuclear fragments in the lymph clefts of the follicles and phagocytosis of these by swollen reticulo-endothelial cells was noted most often on the third day of fever. In the pancreatic nodes similar changes were infrequent and occurred later. This phagocytic activity was present in the mediastinal nodes in about half the animals from the third to the twenty-fifth day, and was evident in slight grade even on the day of onset of fever. Sinus reticulo-endothelial hyperplasia appeared in noteworthy grade and frequency on the seventh and ninth days in the various abdominal nodes, being infrequent and slight before and after that time. Sinus macrophage exudation was infrequent. Sinus hemorrhage and erythrophagia were seen in about one-fourth of the animals, most often in the common mesenteric and pancreatic nodes and on the seventh and ninth days. Patches of proliferation of closely packed fusiform fibroblasts in sinus areas were seen in a few abdominal nodes.

Occasional small granulomata of stellate, irregularly disposed fusiform or polygonal epithelioid cells were seen in some animals killed on the seventh, ninth, eleventh, sixteenth, twentieth, and twenty-fifth days. These occurred in the common mesenteric nodes in 14 of 33 guinea pigs killed on the seventh, ninth, eleventh, sixteenth, twentieth, and twenty-fifth days, in the ileocecal nodes in 1 of 3 on the ninth day, in the pancreatic nodes in 2 of 6 on the seventh day, and in the mediastinal nodes in 3 of 15 killed on the seventh and ninth days. Small granulomata were also encountered here in 2 guinea pigs killed on the twenty-fifth day. In 2 animals, accumulation of polymorphonuclear leucocytes was seen in the granulomata, and in 3 others the granulomata contained multinucleate giant cells with peripherally placed, oval, leptochromatic nuclei.

There is no evident difference in frequency of severity of lesions between the X and M virus strains.

*Adrenals.*—There was a moderate dechromaffinization of the medulla with accumulation of densely stained (green with Giemsa) chromaffin substance in phagocytes in the inner portion of the cortex. This was frequent in the animals taken on the ninth and eleventh days, infrequent earlier and later. With the Q strain chromaffin mobilization was less marked and less frequent. Focal lymphocyte infiltration was first noted in the medulla on the third day of fever in 2 of 8 guinea pigs with the X and M strains. It became more pronounced and more frequent by the seventh day and occurred in all of

the animals killed on the ninth and eleventh days and in 10 of 15 taken on the thirteenth, sixteenth, twentieth, and twenty-fifth days. Sometimes the focal cellular infiltration included large lymphoid and plasma cells as well. Five animals showed small granulomata of epithelioid cells, some with peripheral lymphocyte infiltration, in one including centrally a few polymorphonuclear leucocytes, in another some nuclear fragments. These were seen in animals taken on the seventh, ninth, and eleventh days.

Focal lesions appeared earlier and occurred in more of the animals infected with the X strain than with the M strain. With the Q strain lymphocyte infiltration appeared earlier, was usually slight in grade, and seldom extended to the cortex, and no granulomata were seen.

*Kidneys.*—In the earlier stages the kidneys showed only very moderate parenchymatous degeneration with slight and rather dubious focal vascular endothelial swelling in the cortex. A focal lymphocyte infiltration of the pelvic mucosa and fat appeared in some animals about the third to fifth day from onset of fever, somewhat earlier and more often with the X strain than with the M strain. On the fifth day with the X strain, on the third with the Q strain, and on the seventh with the M strain there was noted a more or less marked edema of the pelvic fatty and areolar tissue. This persisted through the thirteenth day in most of the guinea pigs, and in some as late as the twenty-fifth day. With the appearance of the edema the focal cellular infiltration of the pelvic tissues was often more pronounced, and in a few animals included plasma cells, monocytes, or polymorphonuclear leucocytes as well as lymphocytes. In 3 guinea pigs killed on the ninth, eleventh, and twentieth days, there were occasional small granulomata of stellate or polygonal epithelioid cells with peripheral lymphocyte infiltration. One similar granuloma was seen in the corticomedullary zone in an X strain animal on the twentieth day.

Occasional cortical foci of interstitial and perivascular lymphocyte infiltration were seen in a few animals killed on or before the seventh day from onset. These were present on the ninth and eleventh days in 13 of the 16 guinea pigs and in 6 they were fairly numerous or large. Similar foci persisted in some animals as late as the twenty-fifth day.

With the Q strain renal lesions appeared slightly earlier, were less extensive, disappeared earlier, and included no granulomata.

*Bladder, prostate, and seminal vesicles.*—In animals killed prior to the seventh day, the bladder usually showed no lesions. Twenty-one of the 24 guinea pigs killed on the seventh, ninth, and eleventh days showed few to moderately numerous foci of perivascular or diffuse lymphocyte infiltration in the mucosa, less often in the muscularis and serosa as well. Such focal lesions occurred in 4 of 8 animals killed on the thirteenth and sixteenth days and in 1 of 8 from the twentieth

and twenty-fifth days, and at this period were restricted to the mucosa. Vascular endothelial proliferation, focal fibroblast proliferation, patchy mucosal edema, and focal hemorrhages were relatively infrequent findings. Two animals killed on the seventh day showed single and occasional small mucosal granulomata, in the one vacuolated and composed of stellate epithelioid cells, in the other, compact and composed of fusiform fibroblasts and lymphocytes.

Generally the tubules of the prostate and seminal vesicles showed no lesions. The surrounding fatty and areolar tissue, particularly on the perineal aspect, often showed focal perivascular infiltration by lymphocytes. Such foci were present in 10 of 16 guinea pigs killed on the fifth and seventh days, in 17 of 20 taken on the ninth, eleventh, and thirteenth days, in 6 of 8 from the fifteenth and twentieth days, and in 2 of 15 on the first, third, and twenty-fifth days.

There was no difference in frequency of lesions between the M and X strains in the prostate, seminal vesicles, or urinary bladder.

*Testicles.*—Material taken on the first and third days of fever generally shows only minor degenerative changes and an entire absence of focal vascular lesions. The larger tubules at the lower pole of the epididymis contain at this stage numerous spermatozoa, those in the lower pole nearer the testis contain also small numbers of karyorrhectic rounded basophilic to oxyphilic germinal epithelial cells mixed with spermatozoa. Spermatogenesis in the testicular tubules shows some reduction in amount on the third day, and patches of rarefaction and reticulation of germinal epithelium appear in some animals. Such degenerative changes apparently reach their maximum about the seventh day from onset of fever, and thereafter spermatogenesis appears to increase in amount. In some animals areas of almost complete desquamation of germinal epithelium are present, only Sertoli cells remaining in the affected tubules. These degenerative changes are generally more severe and persist later with the X strain than with the M strain, and are less intense and disappear earlier with the Q strain.

Focal inflammatory lesions are commonest in the epididymis. They appear here about the fifth day. They consist of interstitial and perivascular infiltration by lymphocytes and sometimes plasma cells, and sometimes vascular endothelial and adventitial proliferation. Nodules of lymphocytes were seen among the veins of the pampiniform plexus in many of the animals, and some showed foci also in the polar fat. Foci of lymphocyte infiltration appeared in the testis in 7 animals, 4 with the X strain and 3 with the M strain on and after the seventh day. None were seen with the Q strain. Subacute purulent epididymitis was seen once with each virus strain, and a single case was noted with small epithelioid granulomata in the pampiniform plexus.

Focal inflammatory lesions perhaps appear slightly earlier with the Q and M strains, but are somewhat more numerous and more extensive with the X strain. They persisted to the thirteenth day from onset with the M and X strains, but were practically absent after the ninth day with the Q strain. With the X strain, some lesions were still present on the twenty-fifth day.

The *skeletal muscle* usually showed no focal lesions. Occasional foci of lymphocyte infiltration about fascial arterioles or venules or smaller interstitial vessels were noted in 9 of the 64 guinea pigs, 1 on the third, 1 on the fifth, 3 on the eleventh, and 4 on the sixteenth and twentieth days from onset of fever.

*Central nervous system.*—Focal lesions within the brain substance were rarely observed, a total of 9 such foci being noted in the 64 brains studied. Five of these were lymphocyte infiltration of vessel sheaths, 3 were small nodules of cellular gliosis, 1 of which was accompanied by endothelial proliferation of the adjacent small vessel, and 1 was a small compact granuloma of fusiform epithelioid cells. These 9 focal lesions occurred in 7 guinea pigs inoculated with the X strain and killed on the fifth, ninth, eleventh, thirteenth, sixteenth, and twenty-fifth days from onset of fever.

Occasional foci of meningeal lymphocyte infiltration were observed in more of the guinea pigs, and were more numerous on the ninth and eleventh days than earlier. These were present in most of the animals up to the twenty-fifth day.

Similarly, scattered foci of lymphocyte infiltration were observed in the chorioid plexus of one or more ventricles. In earlier stages vascular endothelial swelling and proliferation often accompanied the cellular exudation. Foci were usually small or perhaps moderate in size and apparently more frequent with the M than with the X strain of virus.

No lesions of the parenchyma of the spinal cord were observed. Few meningeal foci of lymphocyte infiltration were seen in 6 of the 8 guinea pigs killed on the ninth day, in about half of the animals taken on the seventh, eleventh, thirteenth, and sixteenth days, and seldom in earlier or later stages. Fifty-two spinal ganglia were found in the sections in 28 guinea pigs. Foci of capsular lymphocyte infiltration were noted in 2 animals, and of interstitial lymphocyte infiltration or sheath cell proliferation, or both, in 9.

Small foci of interstitial lymphocyte infiltration were noted also in sympathetic ganglia in 5 animals.

#### SUMMARY AND DISCUSSION

The reaction following intraperitoneal inoculation in guinea pigs with the Q, X, and M strains of the virus of "Q" fever is histologically essentially the same.

It is characterized by focal perivascular exudation of cells of the lymphocyte series, less often monocytes and fibroblasts, and vascular endotheliosis in the heart muscle, the lungs, the areolar and fatty tissues of the mediastinum, omentum, peritoneum, and gastro-intestinal submucosae, the adrenal medulla and inner cortex, the renal cortex and pelvis, the epididymis, and less often elsewhere. In the lungs are small foci, scarcely nodules, characterized by a quite sparse leucocyte, monocyte, and predominantly epithelioid cell alveolar exudate and an interstitial lymphocyte and monocyte infiltration, suggestive of but not identical in appearance with the pneumonitis seen in man and after intra-pulmonary inoculation in monkeys (4). There are, in the later stages of the process, quite frequent small nodules of epithelioid cells. Apparently in some locations these are preceded by clumps of polymorphonuclear leucocytes or soon infiltrated by them, and clumps of nuclear debris are often seen within the granulomata. Later multinucleate giant cells with usually peripheral nuclei are observed in the centers of many granulomata, and may almost entirely replace them. Such foci were seen most often in the spleen, liver, and vertebral marrow, less often in various lymph nodes, and infrequently in the heart, mediastinal and mesenteric fat, pancreas, adrenal, renal pelvis and cortex, bladder mucosa, testicle, and brain. Similar small epithelioid nodules have been reported in the spleen and bone marrow in monkeys (4). Serous exudates were quite frequently seen in the renal pelvic areolar tissues and infrequently in the epididymis. Compared with endemic and European typhus, or even with Rocky Mountain spotted fever, focal brain and cord lesions in the guinea pig are strikingly infrequent. Usually only occasional small foci of lymphocyte infiltration of meninges or of the chorioid plexus of one or more ventricles are found.

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## TRAINING FOR NURSES (NATIONAL DEFENSE)

Nurses are the largest single group of professional workers in the health field. Even before war was declared, the demand for nurses far exceeded the supply. Nursing needs are becoming more acute every day. Public health agencies report numerous public health nursing positions for which no qualified candidates are available. Civilian hospitals are faced with a serious shortage of nurses, and several plans for augmenting the services of nurses through the use of volunteer and paid nurses' aides are being developed. The vastly increased demands of the military forces for nursing service make it imperative that the production of registered nurses be speeded up and that efficient use be made of every inactive nurse who is willing to return to active nursing service.

In anticipation of this need, in July 1940 a Nursing Council on National Defense was organized with representation from all branches of nursing and all Federal and national agencies concerned with the education and employment of large groups of nurses.

Two major objectives of this Council were: (1) To study the nursing resources of the country and to plan the most effective use of these resources; (2) to study the nursing educational resources and to plan for increased educational facilities to meet the demands for additional qualified nurses.

In order to accomplish the first objective, that of determining the "nurse power" of the country, it was proposed that a national inventory be made of all registered nurses. The Public Health Service was requested to be the official sponsor of this project, with the various State nurses' associations lending assistance.

In order to accomplish the second objective, that of determining the nursing educational resources and needs of the country, the Nursing Council appointed a committee known as the Educational Policies and Resources Committee, with Miss Isabel M. Stewart of Teachers College, Columbia University, as chairman.

An endeavor was made to interest certain foundations in this project but with little success. It was known that the United States Office of Education was the only Federal agency then receiving funds for the education of workers needed in the defense program, and it was decided to approach Dr. John W. Studebaker, United States Commissioner of Education, relative to this project.

Dr. Studebaker manifested a great deal of interest and understanding relative to the plan set forth by the nursing group and it was at his suggestion that Miss Stewart spent 2 weeks in the United States Office of Education preparing a plan for the expansion of the existing nursing educational facilities to meet national defense needs.

Upon the completion of the report a conference was called by Dr. Studebaker for the purpose of discussing Miss Stewart's recommendations. Representatives of the various nursing organizations and other Federal agencies were invited to this conference. The outcome of this meeting was the acceptance, in principle, of Miss Stewart's report.

After considerable study the committee was convinced that no large increase in the enrollment of student nurses could be accomplished unless financial assistance could be secured to provide more instructors, additional living facilities for the increased student group, and affiliations in certain clinical specialties such as psychiatry and pediatrics.

As a result of these preliminary studies, on July 1, 1941, the Congress made an appropriation of \$1,200,000 for increasing the number of nurses under the "Training for Nurses (national defense) Act." Inasmuch as the Public Health Service was already responsible for the administration of funds for the training of public health personnel, the administration of the nurse training act was also assigned to the Public Health Service.

To guide the Public Health Service in the administration of this program and to assist in the preparation of regulations governing the allotment of funds, the Surgeon General requested the Subcommittee on Nursing, Health and Medical Committee, Office of Defense Health and Welfare, to serve as an advisory committee. The members of this committee were: Miss Mary Beard,<sup>1</sup> chairman, Major Julia Stimson, Sister M. Olivia Gowan, Miss Nellie X. Hawkinson, and Miss Marion Howell. In addition to the members of the Subcommittee on Nursing, the following three nursing education consultants were added to the advisory group: Miss Isabel M. Stewart, Mrs. Elizabeth Soule, Miss Anna D. Wolf.

The purpose of the appropriation made available under the nurse training act is to provide: (1) Refresher courses for inactive graduate nurses; (2) basic programs for student nurses; and (3) advanced programs for graduate nurses in special fields, including programs in midwifery. Funds may be used for tuition, subsistence, and other costs incidental to instruction. The funds may not be used to initiate new programs in basic and advanced nursing education, to construct buildings, or for cash payments to students.

In July and August three nursing education consultants were added to the staff of the United States Public Health Service nursing consultants. They were Margaret Arnstein, on leave from the New York State Department of Health; Eugenia K. Spalding, on leave from the Catholic University of America, Washington, D. C.; and

<sup>1</sup> On December 1, 1941, Miss Beard resigned as chairman and Miss Marion Howell was appointed to succeed her. Miss Marian Sheahan was appointed to fill Miss Howell's vacancy on the committee.

Lucile Petry, on leave from the University of Minnesota, Minneapolis, Minn. Miss Arnstein returned to her position in New York on the first of November and Miss Mary J. Dunn of the regular Public Health Service staff was placed in charge of this project beginning January 1, 1942.

All of the 1,300 accredited schools of nursing were given the opportunity to apply for Federal aid to conduct refresher courses for inactive graduate nurses. About 600 schools which were affiliated with hospitals having a daily average of 100 or more patients were invited to submit plans for an increased enrollment in their basic nursing programs.

On the basis of the original requests for aid, the following allotments were made for each of the three types of programs: \$100,000 for refresher courses; \$900,000 for basic nursing programs; and approximately \$200,000 for advanced programs, including public health nursing. All schools making a request for Federal aid to assist in conducting refresher courses were given allotments. Over \$6,000,000 was requested for basic nursing programs, which amount far exceeded the available funds.

The task of selecting the best out of the more than 200 plans submitted was a difficult one. Some schools were ruled out because they failed to meet the basic requirements as outlined in the regulations of the Surgeon General governing payments for training for nurses. Many were ruled out because of the schools' inability to provide sufficient clinical experience for the proposed increase in students in certain fields, principally pediatrics and obstetrics. In general, the plans were evaluated on the basis of the quality of educational program, the economy of the plan, and the geographic location of the school.

A number of schools which were given allotments in September found it impossible to secure the proposed increased number of students at that time. Funds which accrued owing to the failure of approved plans to materialize were reallocated to the same or to other schools for spring classes.

Table 1 shows the distribution by States of the schools allotted Federal funds for basic nursing programs in the fall of 1941 and the spring of 1942.

Table 2 shows the nursing programs receiving Federal funds by type, number approved, amount of allotment, and proposed increase in student admissions.

One of the greatest nursing shortages discovered at the time plans for basic programs were submitted was that for qualified nurse instructors. Requests for 400 additional instructors were made by these schools; consequently, the advanced curricula in nursing education merited serious consideration. The advanced programs in

special clinical fields are intended to improve the preparation of graduate nurses for their responsibilities as supervisors of nursing services, as well as for the teaching of student nurses in those special fields.

Only a small portion of the appropriation was set aside to assist in the public health nursing programs since other Federal funds are available for this purpose. However, when it was found that enrollment in public health nursing programs had decreased in the fall of 1941, the directors of these latter programs of study were notified that Federal funds might be used for the payment of student tuition and subsistence. Small additional allotments were made to 21 of the 28 universities or colleges offering public health nursing programs, as indicated in table 2.

TABLE 1.—*Distribution by States of schools receiving allotments for basic nursing programs*

State	Number of schools of nursing	Number of schools of nursing affiliated with hospitals having daily average of 100 or more patients	Number of schools allotted Federal funds	
			Fall 1941	Spring 1942
Total, all States.....	1,330	638	60	56
Alabama.....	27	6	2	—
Arizona.....	4	3	—	—
Arkansas.....	9	2	1	—
California.....	35	30	1	2
Colorado.....	16	14	2	—
Connecticut.....	19	13	3	—
Delaware.....	7	3	—	—
District of Columbia.....	7	6	2	—
Florida.....	14	3	—	—
Georgia.....	17	11	—	1
Idaho.....	8	2	—	—
Illinois.....	99	35	5	3
Indiana.....	28	17	2	—
Iowa.....	29	7	3	1
Kansas.....	39	5	—	—
Kentucky.....	16	8	1	—
Louisiana.....	14	5	1	2
Maine.....	17	5	1	2
Maryland.....	23	12	2	1
Massachusetts.....	66	39	3	1
Michigan.....	34	27	2	1
Minnesota.....	30	23	4	2
Mississippi.....	36	—	—	—
Missouri.....	34	22	4	3
Montana.....	10	4	1	—
Nebraska.....	13	7	—	—
Nevada.....	—	—	—	—
New Hampshire.....	14	3	—	—
New Jersey.....	45	34	1	1
New Mexico.....	2	1	—	—
New York.....	105	83	4	3
North Carolina.....	44	8	1	—
North Dakota.....	16	3	—	1
Ohio.....	68	43	4	3
Oklahoma.....	15	5	—	2
Oregon.....	10	6	2	—
Pennsylvania.....	123	64	—	11
Rhode Island.....	7	7	—	1
South Carolina.....	16	5	2	—
South Dakota.....	13	—	—	—
Tennessee.....	22	10	—	2
Texas.....	44	15	—	2
Utah.....	6	4	1	4
Vermont.....	11	1	—	—
Virginia.....	27	9	1	1

TABLE 1.—*Distribution by States of schools receiving allotments for basic nursing programs—Continued*

State	Number of schools of nursing	Number of schools of nursing affiliated with hospitals having daily average of 100 or more patients	Number of schools allotted Federal funds	
			Fall 1941	Spring 1942
Washington.....	24	9	1	1
West Virginia.....	31	4	—	1
Wisconsin.....	24	13	2	3
Wyoming.....	3	—	—	—
Hawaii.....	2	1	—	1
Puerto Rico.....	7	1	1	—

TABLE 2.—*Nursing programs<sup>1</sup> receiving Federal funds by type, number approved, amount of allotment, and proposed increase in student admissions*

Type of program	Number of programs	Federal funds allotted	Proposed increase in student admissions
All programs.....	265	\$1,200,000	6,690
Refresher.....	81	90,675	3,244
Basic (undergraduate).....	<sup>2</sup> 116	870,349	2,472
Postgraduate:			
Administrative and educational.....	<sup>3</sup> 22	84,094	364
Clinical.....	17	47,202	191
Public health nursing.....	22	94,186	387
Anesthesia.....	5	4,694	21
Midwifery.....	2	8,800	11

<sup>1</sup> This does not include those that were approved and have withdrawn from the program.<sup>2</sup> 3 schools have both a fall and a spring operating program.<sup>3</sup> 5 schools have both a fall and a spring program.

With the declaration of war the need for nurses on all fronts was immediately intensified. Requests for aid for refresher courses continued to be submitted in small numbers. Requests for financial aid and inquiries as to the availability of funds for basic and advanced nursing programs have increased markedly. The strategic place of the nurse instructor in any program for increasing student enrollment and consequently increasing the nursing power of the country is recognized. In view of these increased demands upon the nursing profession, a deficiency appropriation as well as a larger appropriation for next year has been requested. Many challenging problems in nursing education have come to the attention of the nursing education consultants. The possibilities of conserving instructional resources through plans for central schools, centralized teaching, and through combinations of nursing schools and colleges are among the most important. The problems of recruiting of well qualified candidates for schools of nursing influence all other problems in this field. The recruitment problem has been referred for direct action to the recruitment committee of the Nursing Council on National Defense.



**DEATHS DURING WEEK ENDED FEBRUARY 14, 1942**

[From the Weekly Mortality Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Feb. 14, 1942	Correspond- ing week, 1941
<b>Data from 88 large cities of the United States:</b>		
Total deaths .....	8,986	9,229
Average for 3 prior years .....	9,806	
Total deaths, first 6 weeks of year .....	55,607	60,067
Deaths per 1,000 population, first 6 weeks of year, annual rate .....	12.9	14.0
Deaths under 1 year of age .....	555	478
Average for 3 prior years .....	524	
Deaths under 1 year of age, first 6 weeks of year .....	3,379	3,244
<b>Data from industrial insurance companies:</b>		
Policies in force .....	64,906,201	64,701,811
Number of death claims .....	9,807	12,490
Death claims per 1,000 policies in force, annual rate .....	7.9	10.1
Death claims per 1,000 policies, first 6 weeks of year, annual rate .....	10.0	11.0

## PREVALENCE OF DISEASE

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*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

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### UNITED STATES

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#### REPORTS FROM STATES FOR WEEK ENDED FEBRUARY 21, 1942

##### Summary

Current reports show a sharp increase in the incidence of meningococcus meningitis, due principally to 30 cases reported in Texas. A total of 84 cases was reported for the current week, as compared with 42 for the preceding week and a 5-year (1937-41) median of 63 cases. The total reported cases to date this year (first 7 weeks) is 416, as compared with a 5-year cumulative median of 386. For the same periods in 1937 and 1938, respectively, 1,067 and 654 cases were reported. Excluding the current report from Texas, the highest incidence so far this year appears to be in the South Atlantic, Middle Atlantic, and North Central States.

A slight increase in the incidence of influenza was recorded, with 5,308 cases as compared with 5,180 cases for the preceding week, a 5-year median of 13,904, and 14,905 cases for the corresponding week last year. Texas, with 1,790 cases, reported the largest number. South Carolina (735), Arkansas (458), Alabama (453), and Virginia (427) were next in order of highest incidence. Only 5 other States reported more than 100 cases.

Of 26 cases of poliomyelitis, 5 occurred in New York and 3 in California. No other State reported more than 2 cases. Other reports include 14 cases of amebic dysentery (5 in Arkansas and 3 in Louisiana), 40 cases of bacillary dysentery (21 in Texas, 10 in Georgia), 39 cases of unspecified dysentery (30 in Virginia, 9 in Arizona), 1 case of anthrax each in Pennsylvania and Georgia, 41 cases of smallpox, of which 22 occurred in Texas, 13 cases of tularemia, and 32 cases of endemic typhus fever (12 in Georgia and 11 in Texas).

The crude death rate for the current week for 88 large cities in the United States is 13.2 per 1,000 population, as compared with 12.5 for the preceding week and a 3-year (1939-41) average of 13.3.

*Telegraphic morbidity reports from State health officers for the week ended February 21, 1942, and comparison with corresponding week of 1941 and 5-year median*

In these tables a zero indicates a definite report, while leaders imply that, although none were reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, men- ingococcus		
	Week ended—		Median 1937- 41	Week ended—		Median 1937- 41	Week ended—		Median 1937- 41	Week ended—		Median 1937- 41
	Feb. 21, 1942	Feb. 22, 1941		Feb. 21, 1942	Feb. 22, 1941		Feb. 21, 1942	Feb. 22, 1941		Feb. 21, 1942	Feb. 22, 1941	
NEW ENG.												
Maine.....	1	0	0	4	11	11	277	138	87	0	0	
New Hampshire.....	0	0	0		16		0	15	20	0	0	
Vermont.....	0	0	0				0	13	7	0	0	
Massachusetts.....	3	1	4				450	376	376	4	4	
Rhode Island.....	1	0	0				94	0	14	0	1	
Connecticut.....	0	0	0	1	63	22	282	37	185	1	0	
MID. ATL.												
New York.....	30	23	25	117	162	174	635	4,910	1,048	6	1	
New Jersey.....	8	18	14	23	310	99	166	1,256	1,251	5	2	
Pennsylvania.....	17	13	33				1,174	3,433	204	7	3	
E. NO. CEN.												
Ohio.....	7	16	20	28	390	32	190	2,190	54	3	0	
Indiana.....	3	13	13	31	29	66	43	226	12	0	0	
Illinois.....	20	18	29	19	54	61	226	2,471	37	0	0	
Michigan.....	6	1	10	2	53	12	249	2,396	424	0	1	
Wisconsin.....	0	2	1	28	273	183	411	662	662	0	0	
W. NO. CEN.												
Minnesota.....	4	1	2	1	61	4	680	7	85	0	1	
Iowa.....	4	7	7	3	300	42	200	195	158	0	0	
Missouri.....	2	8	10	2	53	137	73	78	11	1	1	
North Dakota.....	1	1	2	22	40	23	59	12	12	0	0	
South Dakota.....	0	2	1	1	6	3	5	5	2	0	0	
Nebraska.....	1	2	2	3	15	9	32	4	16	0	0	
Kansas.....	1	3	8	17	45	45	251	272	272	0	0	
SO. ATL.												
Delaware.....	2	1	1				6	216	34	0	0	
Maryland.....	1	2	2	9	103	107	433	77	77	5	2	
Dist. of Col.....	2	1	5	1	18	18	34	59	6	1	1	
Virginia.....	7	13	15	427	1,959	1,338	76	1,338	188	6	3	
West Virginia.....	5	6	7	53	321	321	525	189	21	0	3	
North Carolina.....	16	10	17	59	435	71	1,585	343	343	2	0	
South Carolina.....	4	1	4	735	2,246	1,116	126	237	30	0	4	
Georgia.....	5	2	10	145	736	385	268	349	197	1	1	
Florida.....	7	1	5	4	127	36	116	145	65	2	0	
E. SO. CEN.												
Kentucky.....	5	6	10		117	117	54	560	106	0	0	
Tennessee.....	11	9	9	79	604	307	113	123	123	1	3	
Alabama.....	12	13	13	453	1,483	699	95	294	284	0	3	
Mississippi.....	7	1	5							2	1	
W. SO. CEN.												
Arkansas.....	5	4	7	458	286	286	365	107	107	0	2	
Louisiana.....	3	5	10	5	96	96	57	5	11	1	0	
Oklahoma.....	10	2	8	227	310	310	404	14	14	0	1	
Texas.....	0	39	51	1,790	3,100	3,100	1,881	577	414	30	0	
MOUNTAIN												
Montana.....	8	1	1	1	55	35	168	3	8	0	0	
Idaho.....	1	1	1			1	38	12	29	0	0	
Wyoming.....	0	2	1	209	52	1	57	36	17	0	0	
Colorado.....	4	7	8	161	61	35	0	147	91	2	0	
New Mexico.....	0	1	1	2	32	19	59	85	63	0	1	
Arizona.....	5	3	3	166	196	196	202	175	21	0	0	
Utah.....	0	2	2	7	43	16	55	8	81	0	1	
Nevada.....	0	0					97	0		0	0	
PACIFIC												
Washington.....	4	5	1	3	11	11	54	141	141	0	1	
Oregon.....	3	0	2	29	41	42	137	235	27	0	1	
California.....	9	8	28	83	592	592	3,161	99	205	4	1	
Total.....	245	275	512	5,308	14,905	13,904	15,663	24,270	13,876	84	43	
7 weeks.....	2,354	2,195	4,042	33,080	422,690	103,011	80,404	106,270	75,068	416	338	

See footnotes at end of table.

*Telegraphic morbidity reports from State health officers for the week ended February 21, 1942, and comparison with corresponding week of 1941 and 5-year median—Con.*

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever		
	Week ended—		Median 1937-41	Week ended—		Median 1937-41	Week ended—		Median 1937-41	Week ended—		Median 1937-41
	Feb. 21, 1942	Feb. 22, 1941		Feb. 21, 1942	Feb. 22, 1941		Feb. 21, 1942	Feb. 22, 1941		Feb. 21, 1942	Feb. 22, 1941	
NEW ENG.												
Maine.....	0	0	0	19	9	13	0	0	0	0	0	0
New Hampshire.....	0	0	0	5	4	4	0	0	0	1	0	0
Vermont.....	0	0	0	15	6	11	0	0	0	1	0	0
Massachusetts.....	0	0	0	373	105	222	0	0	0	3	1	2
Rhode Island.....	0	0	0	14	5	19	0	0	0	0	0	0
Connecticut.....	0	0	0	45	39	101	0	0	0	0	1	1
MID. ATL.												
New York.....	5	1	0	458	410	731	0	0	0	6	5	5
New Jersey.....	2	1	1	146	270	204	0	0	0	0	1	1
Pennsylvania.....	0	1	1	447	330	552	0	0	0	8	5	5
E. NO. CEN.												
Ohio.....	2	0	0	370	262	240	0	4	4	4	4	4
Indiana.....	1	1	1	109	167	167	1	2	2	0	0	1
Illinois.....	1	1	1	247	432	656	0	1	21	1	3	5
Michigan <sup>2</sup> .....	1	3	1	300	232	538	4	0	0	1	3	3
Wisconsin.....	0	1	0	219	139	264	0	4	5	1	0	0
W. NO. CEN.												
Minnesota.....	0	0	0	82	37	109	0	2	8	0	0	0
Iowa.....	0	0	0	47	55	142	0	10	29	0	1	1
Missouri.....	0	0	0	53	97	146	1	1	12	4	0	0
North Dakota.....	0	0	0	22	14	42	0	0	1	1	0	1
South Dakota.....	0	0	0	41	29	22	2	4	3	0	0	0
Nebraska.....	0	0	0	31	33	57	0	0	3	0	0	0
Kansas.....	0	0	0	96	45	170	1	3	5	1	1	2
SO. ATL.												
Delaware.....	1	0	0	59	16	13	0	0	0	0	0	0
Maryland <sup>2</sup> .....	0	0	0	78	65	43	0	0	0	1	1	1
Dist. of Col.....	0	0	0	13	18	20	0	0	0	0	0	1
Virginia.....	0	2	1	25	41	41	0	0	0	2	5	3
West Virginia.....	0	1	1	37	35	56	0	0	0	1	0	2
North Carolina.....	2	2	1	68	47	42	1	0	0	0	0	1
South Carolina.....	0	0	0	11	15	6	0	0	0	2	7	5
Georgia.....	0	0	1	16	30	19	0	0	1	24	0	3
Florida.....	0	3	0	3	5	8	0	0	0	4	1	2
E. SO. CEN.												
Kentucky.....	1	0	0	81	124	104	1	0	0	0	4	4
Tennessee.....	1	0	0	43	92	47	4	0	0	5	3	3
Alabama.....	0	0	0	17	26	23	1	1	0	1	1	2
Mississippi <sup>2</sup> .....	2	1	1	12	8	8	2	0	0	3	1	1
W. SO. CEN.												
Arkansas.....	0	1	0	9	6	10	0	2	4	2	3	3
Louisiana.....	1	1	1	5	8	8	1	0	0	3	1	7
Oklahoma.....	0	0	0	17	13	44	0	1	1	2	2	2
Texas.....	0	0	2	68	58	108	22	0	4	0	2	9
MOUNTAIN												
Montana.....	0	1	0	37	33	33	0	0	1	0	2	0
Idaho.....	1	0	0	4	10	14	0	0	4	0	0	0
Wyoming.....	1	0	0	11	8	8	0	0	0	0	0	0
Colorado.....	1	0	0	58	25	34	0	1	7	0	2	0
New Mexico.....	0	0	0	7	5	13	0	0	1	0	0	0
Arizona.....	0	0	0	8	9	9	0	0	0	0	0	1
Utah <sup>2</sup> .....	0	1	0	48	3	26	0	0	0	0	1	0
Nevada.....	0	0	---	1	0	---	0	0	---	0	0	---
PACIFIC												
Washington.....	0	1	0	57	32	56	0	0	1	0	0	0
Oregon.....	0	0	0	7	9	41	0	0	3	0	1	1
California.....	3	2	2	130	151	166	0	0	9	5	3	3
Total.....	26	25	25	4,069	3,612	5,518	41	36	253	87	65	105
7 weeks.....	180	204	159	25,941	23,882	37,320	138	338	2,081	580	479	776

See footnotes at end of table.

*Telegraphic morbidity reports from State health officers for the week ended February 21, 1942—Continued*

Division and State	Whooping cough		Week ended Feb. 21, 1942								
	Week ended—		An-thrax	Dysentery			En-ceph-alitis	Lep-rosy	Rocky Mountain spotted fever	Tula-remia	Ty-phus fever
	Feb. 21, 1942	Feb. 22, 1941		Ame-bic	Bacil-lary	Un-specified					
NEW ENG.											
Maine.....	48	22	0	0	0	0	0	0	0	0	0
New Hampshire.....	4	0	0	0	0	0	0	0	0	0	0
Vermont.....	34	4	0	0	0	0	0	0	0	0	0
Massachusetts.....	204	172	0	0	0	0	0	0	0	0	0
Rhode Island.....	67	18	0	0	0	0	0	0	0	0	0
Connecticut.....	82	60	0	0	0	0	0	0	0	0	0
MID. ATL.											
New York.....	504	276	0	0	2	0	3	0	0	0	0
New Jersey.....	207	90	0	0	0	0	1	0	0	0	0
Pennsylvania.....	209	398	1	2	0	0	1	0	0	2	0
E. NO. CEN.											
Ohio.....	256	269	0	0	1	0	0	0	0	0	0
Indiana.....	19	13	0	0	0	0	0	0	0	0	0
Illinois.....	131	67	0	0	1	0	3	0	0	0	0
Michigan <sup>2</sup> .....	234	314	0	0	0	0	0	0	0	0	0
Wisconsin.....	252	146	0	0	0	0	2	0	0	1	0
W. NO. CEN.											
Minnesota.....	38	38	0	0	0	0	0	0	0	0	0
Iowa.....	6	38	0	0	0	0	0	0	0	1	0
Missouri.....	4	26	0	0	0	0	0	0	0	1	0
North Dakota.....	15	46	0	0	0	0	0	0	0	0	0
South Dakota.....	6	4	0	0	0	0	0	0	0	0	0
Nebraska.....	4	22	0	0	0	0	0	0	0	0	0
Kansas.....	46	129	0	0	0	0	0	0	0	0	0
SO. ATL.											
Delaware.....	2	5	0	0	0	0	0	0	0	0	0
Maryland <sup>2</sup> .....	47	82	0	0	0	0	0	0	0	0	0
Dist. of Col.....	32	7	0	0	0	0	0	0	0	0	0
Virginia.....	70	97	0	0	0	30	0	0	0	0	0
West Virginia.....	124	27	0	0	0	0	0	0	0	0	0
North Carolina.....	211	368	0	0	0	0	0	0	0	2	1
South Carolina.....	54	133	0	0	0	0	0	0	0	1	0
Georgia.....	18	22	1	1	10	0	0	0	0	1	12
Florida.....	19	7	0	0	0	0	0	0	0	0	4
E. SO. CEN.											
Kentucky.....	86	55	0	1	0	0	0	0	0	0	0
Tennessee.....	37	57	0	0	0	0	0	0	0	1	0
Alabama.....	5	34	0	0	0	0	0	0	0	0	1
Mississippi <sup>2</sup> .....			0	0	0	0	0	0	0	2	0
W. SO. CEN.											
Arkansas.....	7	44	0	5	0	0	0	0	0	1	0
Louisiana.....	3	2	0	3	0	0	0	0	0	0	3
Oklahoma.....	9	22	0	0	0	0	0	0	0	0	0
Texas.....	162	348	0	0	21	0	0	0	0	0	11
MOUNTAIN											
Montana.....	15	24	0	0	0	0	0	0	0	0	0
Idaho.....	10	28	0	0	0	0	0	0	0	0	0
Wyoming.....	5	3	0	0	0	0	0	0	0	0	0
Colorado.....	33	69	0	0	0	0	0	0	0	0	0
New Mexico.....	22	17	0	0	0	0	0	0	0	0	0
Arizona.....	81	37	0	0	0	9	0	0	0	0	0
Utah <sup>2</sup> .....	19	70	0	0	0	0	0	0	0	0	0
Nevada.....	13	0	0	0	0	0	0	0	0	0	0
PACIFIC											
Washington.....	92	101	0	0	0	0	0	0	0	0	0
Oregon.....	19	5	0	0	0	0	0	0	0	0	0
California.....	185	280	0	2	5	0	0	0	0	0	0
Total.....	3,750	4,096	2	14	40	39	10	0	0	13	32
7 weeks.....	29,262	29,983									

<sup>1</sup> New York City only.<sup>2</sup> Period ended earlier than Saturday.



## WEEKLY REPORTS FROM CITIES

City reports for week ended February 7, 1942

This table lists the reports from 62 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Etiophyllitis, infectious cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Polymycolitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
Atlanta, Ga.	1	0	19	0	5	0	9	0	4	0	0	2
Baltimore, Md.	2	0	6	0	194	4	25	0	16	0	0	25
Billings, Mont.	0	0	0	0	0	0	0	0	0	0	0	0
Birmingham, Ala.	2	0	13	2	2	0	9	0	3	0	0	1
Boston, Mass.	0	0	1	65	1	12	1	100	0	0	0	63
Bridgeport, Conn.	0	0	0	0	0	0	0	5	0	0	0	0
Camden, N. J.	1	0	0	13	0	0	0	7	0	0	0	5
Charleston, S. C.	0	0	66	1	3	0	1	0	0	0	0	0
Chicago, Ill.	6	0	10	2	50	0	35	0	88	0	1	69
Cleveland, Ohio.	2	0	11	1	2	2	16	0	36	0	0	30
Columbus, Ohio.	0	0	0	0	8	0	4	0	4	0	0	0
Cumberland, Md.	0	0	0	0	4	0	0	0	0	0	0	0
Dallas, Tex.	4	0	1	1	80	0	6	0	5	0	0	5
Duluth, Minn.	0	0	0	0	2	0	1	0	8	0	0	5
Fall River, Mass.	0	0	0	0	0	0	1	0	35	0	0	0
Flint, Mich.	0	0	1	0	0	0	4	0	9	0	0	2
Fort Wayne, Ind.	1	0	0	0	0	0	3	0	1	0	0	0
Frederick, Md.	0	0	0	0	16	0	1	0	0	0	0	0
Galveston, Tex.	0	0	0	0	0	0	1	0	0	0	0	0
Grand Rapids, Mich.	0	0	0	0	12	0	0	0	4	0	0	15
Great Falls, Mont.	0	0	0	130	0	1	0	2	0	0	0	6
Hartford, Conn.	0	0	0	6	0	2	0	9	0	0	0	1
Houston, Tex.	0	0	0	8	0	8	0	2	0	1	5	5
Indianapolis, Ind.	0	0	0	12	0	4	0	19	0	0	0	17
Kenosha, Wis.	0	0	0	1	0	0	0	3	0	0	0	2
Little Rock, Ark.	0	0	20	0	53	0	9	0	0	0	0	2
Los Angeles, Calif.	7	0	24	3	122	1	15	0	17	0	0	20
Lynchburg, Va.	0	0	0	0	0	0	4	0	1	0	0	5
Milwaukee, Wis.	0	0	0	0	19	0	0	25	0	0	0	129
Minneapolis, Minn.	0	0	0	0	60	0	5	0	24	0	0	8
Mobile, Ala.	1	0	1	4	0	1	0	1	0	0	0	0
Nashville, Tenn.	0	0	1	4	0	2	0	3	0	0	0	12
Newark, N. J.	0	0	5	0	22	0	4	1	17	0	0	35
New Haven, Conn.	0	0	0	98	0	2	0	1	0	0	0	2
New Orleans, La.	1	0	3	1	10	0	8	0	3	0	1	7
New York, N. Y.	15	1	10	3	51	8	95	0	196	0	2	248
Omaha, Nebr.	0	0	0	0	2	0	1	0	3	0	0	0
Philadelphia, Pa.	1	1	3	3	33	1	36	0	106	0	0	39
Pittsburgh, Pa.	0	0	3	2	8	0	12	0	10	0	1	16
Providence, R. I.	3	0	1	1	57	0	2	0	3	0	0	46
Racine, Wis.	0	0	0	3	0	0	0	5	0	0	0	24
Reading, Pa.	0	0	0	3	0	2	0	0	0	0	0	0
Richmond, Va.	1	0	0	0	0	0	2	0	2	0	0	0
Roanoke, Va.	0	0	0	0	0	0	0	0	0	0	0	0
Rochester, N. Y.	0	0	1	5	0	2	0	10	0	0	0	8
Sacramento, Calif.	1	0	1	0	177	0	1	0	5	0	0	15
Saint Joseph, Mo.	0	0	0	1	0	0	4	0	2	0	0	0
Saint Louis, Mo.	1	0	4	1	51	1	11	0	26	0	0	6
Salt Lake City, Utah.	0	0	1	1	0	1	0	5	0	0	0	5
Shreveport, La.	0	0	0	7	0	4	0	0	0	0	1	0
Springfield, Ill.	0	0	0	17	0	2	0	3	0	0	0	0
Springfield, Mass.	0	0	0	10	0	4	0	18	0	0	0	36
Superior, Wis.	0	0	0	0	0	0	0	2	0	0	0	3
Syracuse, N. Y.	0	0	0	7	0	3	0	9	0	0	0	52
Terre Haute, Ind.	0	0	0	1	0	2	0	1	0	0	0	0
Topeka, Kans.	0	0	0	5	0	2	0	6	0	0	0	7
Trenton, N. J.	0	0	0	2	0	0	1	7	0	0	0	10
Wheeling, W. Va.	0	0	0	50	0	1	0	0	0	0	0	1
Wichita, Kans.	0	0	0	9	0	4	0	6	0	0	0	2
Wilmington, Del.	0	0	2	2	0	4	0	18	0	0	0	0
Winston-Salem, N. C.	0	0	6	91	0	2	0	0	0	0	0	1
Worcester, Mass.	0	0	0	9	0	6	0	16	0	0	1	22

Anthrax.—Cases: New Orleans, 1.

Dysentery, amoebic.—Cases: Cleveland, 1; Little Rock, 1; New York, 1.

Dysentery, bacillary.—Cases: Chicago, 1; Los Angeles, 2; New York, 6.

Tularemia.—Cases: St. Louis, 1.

Typhus fever.—Cases: Houston, 1; Los Angeles, 1; New York, 1; Richmond, 1.

*Rates (annual basis) per 100,000 population for a group of 62 selected cities (population, 1942, 27,086,492)*

Period	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
		Cases	Deaths						
Week ended Feb. 7, 1942....	9.63	39.66	5.58	309.36	76.04	175.37	0.00	1.54	195.20
Average for week, 1937-41....	19.89	329.85	22.21	628.42	128.62	239.28	5.60	3.86	171.88

## TERRITORIES AND POSSESSIONS

### HAWAII TERRITORY

*Plague (rodent).*—Five rats found during the period January 2 to 10, 1942, in Paauhau, Hamakua District, Island of Hawaii, T. H., have been proved positive for plague.

## FOREIGN REPORTS

### CANADA

*Provinces—Communicable diseases—Week ended January 24, 1942.*  
During the week ended January 24, 1942, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Que- bec	On- tario	Mani- toba	Sas- katch- ewan	Al- berta	British Colum- bia	Total
Cerebrospinal meningitis.		9	3	5	8	1	1		4	31
Chickenpox		21		300	566	128	28	9	119	1,171
Diphtheria		28		26	6	1			1	62
Dysentery				3						3
German measles		2		33	35	21	19	16	23	149
Influenza		33			3	38			37	111
Leprosy									1	1
Measles		8		379	134	158	44	20	31	774
Mumps		9		335	419	148	71	87	317	1,386
Pneumonia	3	15			10		2		18	48
Psittacosis					1					1
Scarlet fever		10	7	80	310	39	31	43	24	544
Trachoma									2	2
Tuberculosis	1	4	8	89	58	24		3		187
Typhoid and paratyphoid fever			2	13	1	1			1	18
Undulant fever					3	1				4
Whooping cough		40	1	187	89	5	14		25	361
Other communicable diseases	2	25		4	221	51	1	1	30	335

### TRINIDAD

*Poliomyelitis.*—According to information dated February 9, 1942, poliomyelitis has been reported on the Island of Trinidad, as follows: October 1941, 4 cases, 1 death; November, 12 cases, 4 deaths; December, 35 cases, 7 deaths; January 1942, 80 cases, 4 deaths. The disease seems particularly prevalent among persons under 10 years of age.

# WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Health, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

## CHOLERA

[C indicates cases; P, present]

NOTE.—Since many of the figures in the following tables are from weekly reports, the accumulated totals are for approximate dates.

Place	January- November 1941	Decem- ber 1941	January 1942—week ended—				
			3	10	17	24	31
ASIA							
Afghanistan: Southern Province.....	C	P	—	—	—	—	—
Ceylon.....	C	3	—	—	—	—	—
China:							
Canton.....	C	464	—	—	—	—	—
Hong Kong.....	C	1, 667	—	—	—	—	—
Macao.....	C	1, 473	2	—	—	—	—
Shanghai.....	C	834	—	—	—	—	—
India.....	C	89, 922	—	—	—	—	—
Bombay.....	C	15	—	—	—	—	—
Calcutta.....	C	2, 119	18	—	—	—	—
Rangoon.....	C	116	—	—	—	—	—
India (French).....	C	34	—	—	—	—	—
Japan: Taiwan.....	C	2	—	—	—	—	—

## PLAGUE

[C indicates cases; P, present]

<b>AFRICA</b>							
Belgian Congo.....	C	139					
British East Africa:							
Kenya.....	C	686	36				
Tanganyika Territory.....	C	2					
Uganda.....	C	180	4				
Egypt: Port Said.....	C	10					
Madagascar.....	C	248	37				22
Morocco.....	C	2,181	29	4	2	5	6
Casablanca <sup>1</sup> .....	C	4					4
Tunisia: Tunis.....	C	2					
Union of South Africa.....	C	93					
<b>ASIA</b>							
China:							
Fukien Province: <sup>4</sup>							
Foochow.....	C	3					
Dutch East Indies:							
Java and Madura.....	C	484					
West Java.....	C	368					
India.....	C	4,150					
Calcutta.....	C	3					
Rangoon.....	C	9	P				
Indochina (French).....	C	25					
Palestine: Haifa.....	C	11				1	
Plague-infected rats.....	C	25					
Thailand: Lampang Province.....	C	3					
<b>EUROPE</b>							
Portugal: Azores Islands.....	C	2	1				
<b>NORTH AMERICA</b>							
Canada—Alberta—Plague-infected ground squirrel.....		1					

<sup>1</sup> Includes 21 cases of pneumonic plague.

<sup>2</sup> For the month of January.

<sup>3</sup> A report dated June 23, 1941, stated that an outbreak of plague had occurred in Casablanca, Morocco, where several deaths had been reported.

<sup>4</sup> A report dated Nov. 22, 1941, stated that bubonic plague had appeared in epidemic form in Shaowu and Yangkow, Fukien Province.

## PLAGUE—Continued

[C indicates cases; P, present]

Place	January- November 1941	Decem- ber 1941	January 1942—week ended—				
			3	10	17	24	31
SOUTH AMERICA							
Argentina:							
Buenos Aires Province.....	C	3					
Cordoba Province.....	C	43	7				
Mendoza Province.....	C	3					
Santa Fe Province—Plague-infected rats.....		67					
Santiago del Estero Province.....	C	2					
Brazil:							
Alagoas State.....	C	36					
Bahia State.....	C	10					
Pernambuco State.....	C	70					
Rio de Janeiro State.....	C	2					
Chile:							
Santiago.....	C	1					
Valparaiso.....	C	1					
Ecuador.....	C	33					
Peru:							
Ancash Department.....	C	10					
Lambayeque Department.....	C	3					
Libertad Department.....	C	11	1				
Lima Department.....	C	17	7				
Moquegua Department—Ilo.....	C	7					
Piura Department.....	C	10	1				
OCEANIA							
Hawaii Territory: <sup>7</sup> Plague-infected rats.....		66	9	1	4		
New Caledonia.....	C	11					

<sup>1</sup> Includes 3 cases of pneumonic plague.<sup>2</sup> Imported.<sup>7</sup> During April and May 1941, 4 lots of plague-infected fleas were also reported in Hawaii Territory.

## SMALLPOX

[C indicates cases]

<b>AFRICA</b>							
Algeria..... C	747	188	67				45
Angola..... C	29						
Belgian Congo..... C	682						
British East Africa..... C	72						
Dahomey..... C	467						
French Guinea..... C	45						
Gold Coast..... C	312						
Ivory Coast..... C	40						
Morocco <sup>2</sup> ..... C	648						441
Nigeria..... C	985	41					
Niger Territory..... C	271	2					
Portuguese East Africa..... C	9						
Portuguese Guinea..... C	20						
Rhodesia: Southern..... C	86						
Senegal..... C	65						
Sierra Leone..... C	15						
Sudan (Anglo-Egyptian)..... C	7						
Sudan (French)..... C	19						
Tunisia: Tunis..... C		1					
Union of South Africa..... C	758						
<b>ASIA</b>							
Ceylon..... C	114						
China..... C	259						
Chosen..... C	696						
Dutch East Indies—Bali Island..... C	3						
India..... C	24,469						
India (French)..... C	9						
India (Portuguese)..... C	70						
Indochina (French)..... C	1,181	117					
Iran..... C	8						
Iraq..... C	1,417	38					

<sup>1</sup> For June.<sup>2</sup> A report dated Dec. 31, 1941, stated that an epidemic of smallpox had occurred near Casablanca, Morocco, where about 100 cases per week were reported.<sup>3</sup> For January 1942.



## SMALLPOX—Continued

[C indicates cases]

Place	January- November 1941	Decem- ber 1941	January 1942—week ended—				
			3	10	17	24	31
ASIA—continued							
Japan.....	C	200					
Straits Settlements.....	C	1					
Syria.....	C	1					
Thailand.....	C	303					
EUROPE							
France.....	C	1					
Portugal.....	C	42	11		2		
Spain.....	C	429	28	3	3	5	
Switzerland.....	C	1					
NORTH AMERICA							
Canada.....	C	25					
Dominican Republic.....	C	2					
Guatemala.....	C	6					
Mexico.....	C	317					
Panama Canal Zone (alastim).....	C	* 1					
SOUTH AMERICA							
Bolivia.....	C	18					
Brazil.....	C	* 1					
Colombia.....	C	933	2				
Paraguay.....	C	* 8					
Peru.....	C	778					
Uruguay.....	C	7					
Venezuela (alastim).....	C	239	15				

\* For September.

\* For January, February, and March.

\* For August.

## TYPHUS FEVER

[C indicates cases]

<b>AFRICA</b>							
Algeria.....	C	10,750	2,077				
British East Africa: Kenya.....	C	10	2				
Egypt.....	C	9,324					
Morocco <sup>1</sup> .....	C	1,077	290	115	323	216	315
Sierra Leone.....	C	5					474
Tunisia.....	C	6,040	1,038	187	346		
Union of South Africa.....	C	780					
<b>ASIA</b>							
China.....	C	245					
Chosen.....	C	425					
Dutch East Indies: Sumatra.....	C	136					
India.....	C	4					
Iran.....	C	105					
Iraq.....	C	53					
Japan.....	C	864					
Malaya: Unfederated States.....	C	1					
Palestine.....	C	155	34	2		2	
Straits Settlements.....	C	8					
Trans-Jordan.....	C	9					
<b>EUROPE</b>							
Bulgaria.....	C	243	41	13	3	6	
France (unoccupied zone).....	C	2					
Germany.....	C	1,890	208	85			
Gibraltar.....	C	2					
Greece.....	C	7					
Hungary.....	C	441	31	39		15	29
Irish Free State.....	C	26					
Poland.....	C	965					
Portugal.....	C	5					
Rumania.....	C	1,119	708	180		192	184
Spain.....	C	9,327	233				
Switzerland.....	C	5					
Turkey.....	C	676					
Yugoslavia.....	C	78					

<sup>1</sup> Information dated Dec. 31, 1941, reports typhus fever present in epidemic form in Casablanca, Morocco.

## TYPHUS FEVER—Continued

[C indicates cases]

Place	January- November 1941	Decem- ber 1941	January 1942—week ended—				
			3	10	17	24	31
NORTH AMERICA							
Jamaica.....	C		1				
Guatemala.....	C	181	10				
Mexico.....	C	203	8				
Panama Canal Zone.....	C	3					
Puerto Rico.....	C	10	2	1			
SOUTH AMERICA							
Bolivia.....	C	275					
Brazil.....	C	1					
Chile.....	C	337		4			
Colombia.....	C	11					
Ecuador.....	C	119	8				
Peru.....	C	1,079					
Venezuela.....	C	58	1				
OCEANIA							
Australia.....	C	14					
Hawaii Territory.....	C	56	4	3	1		

<sup>2</sup> For January, February, and March.<sup>3</sup> January to June, inclusive.

## YELLOW FEVER

[C indicates cases; D, deaths]

<b>AFRICA</b>							
Belgian Congo:							
Aba.....	C		12				
Kimvulu.....	C	1					
Libenge.....	C	1					
Stanleyville.....	D	11					
British East Africa: Uganda.....	C	1					
Dahomey: Grand Popo.....	C		12				
French Equatorial Africa:							
Gabon.....	C	2					
Mayumba.....	C	4					
French Guinea.....	C	3					
French West Africa.....	C	5					1
Gold Coast.....	C	3					
Accra.....	C	1					
Ivory Coast.....	C	7	1		1		
Nigeria.....	C	1					
Senegal.....	C	1					
Sierra Leone: Freetown.....	C						1
Spanish Guinea.....	D	4					
Sudan (French).....	C	10	1				1
<b>SOUTH AMERICA</b> <sup>7</sup>							
Brazil:							
Amazonas State.....	D	4					
Bahia State.....	D	2					
Para State.....	D	8					
Colombia:							
Antioquia Department.....	D	3					
Boyaca Department.....	D	8					
Intendencia of Meta.....	D	14	1				
Santander Department.....	D	20					
Tolima Department.....	D	1					
Peru: Junin Department.....	C	5					
Venezuela: Bolivar State.....	C	1					

<sup>1</sup> Suspected.<sup>2</sup> Includes 1 suspected case.<sup>3</sup> Includes 2 suspected cases.<sup>4</sup> According to information dated Feb. 9, 1942, 15 deaths from yellow fever among Europeans have occurred in Senegal.<sup>5</sup> For January 1942.<sup>6</sup> Includes 4 suspected cases.<sup>7</sup> All yellow fever in South America is of the jungle type unless otherwise specified.